

OWNER'S MANUAL

SEGA ENTERPRISES, LTD.

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UPRIGHT TYPE

-SPECIFICATIONS

INSTALLATION SPACE: 630 mm (24.8 in.) W \times 860 mm (33.9 in.) D

HEIGHT : 1850 mm (72.8 in.)

POWER : 240 W

C.R.T. : 20" MONITOR WEIGHT : 124 kg (273 lbs.)

NOTE

· Descriptions herein contained may be subject to improvement changes without notice.

INTRODUCTION TO THE OWNER'S MANUAL

SEGA ENTERPRISES, LTD., supported by its high electronic technology of LSIs, microprocessors, etc. and a wealth of experience, has for more than 30 years been supplying various innovative and popular game machines to the world market. This OWNER'S manual is intended to provide detailed comments together with all the necessary information covering the operation in general of electronic assemblies, electromechanicals, servicing control, spare parts, etc. as regards the AFTER BURNER U/R, a new SEGA product. The manual is intended for those who have knowledge of electricity and technical expertise especially in ICs, CRTs, microprocessors, etc. Carefully read so as to acquire sufficient knowledge before working on the machine. Should there be a malfunction, non-technical personnel should under no circumstances touch the interior system.

1. HANDLING PRECAUTIONS

When installing or inspecting, be very careful of the following points and pay attention to ensure that the player can enjoy the game safely.

- Be sure to turn the power off before working on the machine.
- To insert or pull out the plug quickly is dangerous.
- It is necessary to make sure that the power cord or the grounding wire is not exposed on the road, etc. in a manner so as to be dangerous. Make sure that grounding connections are made safely at the position where so specified.
- Do not use any fuse that does not meet the specified rating.
- Make complete connections for the IC board and other connectors. Insufficient insertion is very dangerous.

Also, for the IC board circuit inspections, only the logic tone is allowed. The use of a tester is not permitted, so be careful in this regard. After confirming that there are no irregularities, turn the power ON.

2. PREVENTION OF COUNTERFEITING AND CONVERSION

LABELLING

To prevent counterfeits and conversions, the following labels are put on all the SEGA products. When handling such goods, be sure to confirm the labels. They are used to prevent illegal acts such as the unauthorized copying of the products and the printed circuit boards thereof or carrying on business by manufacturing similar merchandise or by converting, selling or using such products or printed circuit boards.

ORIGINAL SEAL

The following seal is put on the machines manufactured by SEGA.



LICENSE SEAL

The following seal is put on the kits, such as the printed circuit boards, of SEGA products.



COPYRIGHT NOTICE

This SEGA product has the copyright notice as follows:

© SEGA 1987

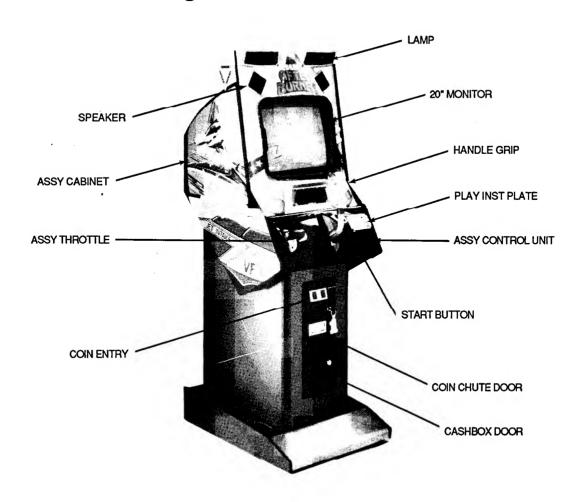
This signifies that this work was disclosed in 1987 and is the property of SEGA ENTERPRISES, LTD.

3. PRECAUTIONS CONCERNING THE PLACE OF INSTALLATION

The SUPER AFTER BURNER U/R is an indoor game machine. Absolutely do not install it outside. Even indoors, avoid installing in places mentioned below so as to ensure proper usage:

- Places subject to rain or water leakage, or condensation due to humidity.
- In the proximity of an indoor swimming pool and/or shower.
- Places subject to direct sunlight.
- Places subject to heat sources from heating units, etc., or hot air.
- Vicinity of highly inflammable/volatile chemicals or hazardous matter.
- · Sloped surfaces.
- Vicinity of anti-disaster facilities such as fire exits and fire extinguishers.
- Places subject to any type of violent impact.
- · Dusty places.

4. NAME OF PARTS (1)



TOOLS

(TAMPERPROOF WRENCH)

M 4 540-0006-01

M 5 540-0007-01

M 8 540-0009-01

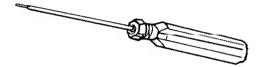
(TAMPERPROOF DRIVER)

M4 540-0018

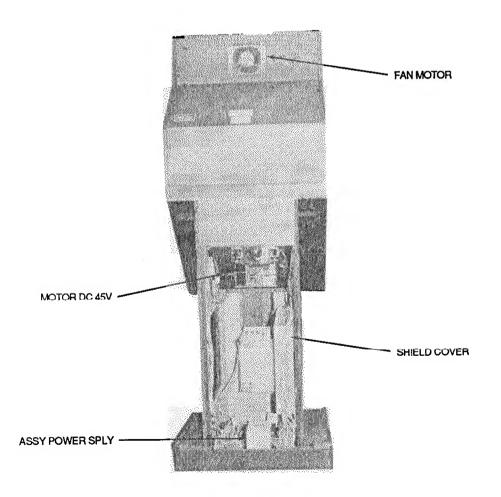
M5 540-0017

M8 540-0011

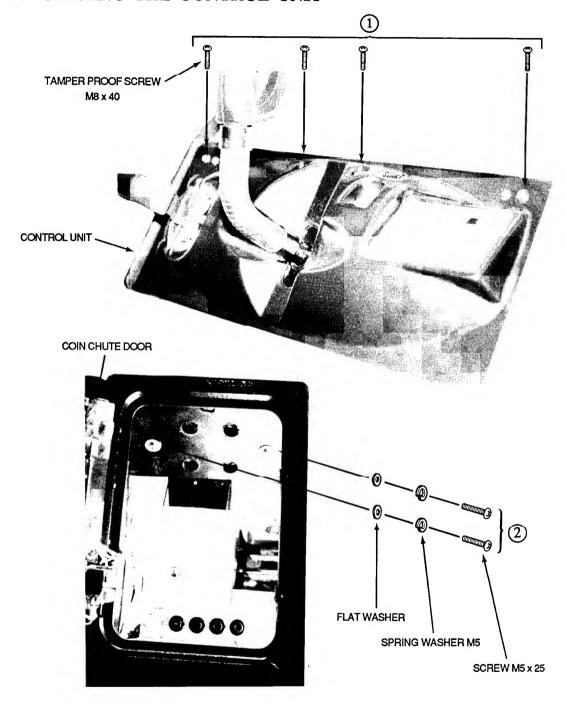




5. NAME OF PARTS ②



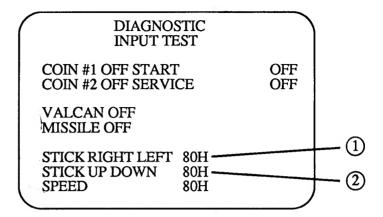
6. OPENING THE CONTROL UNIT



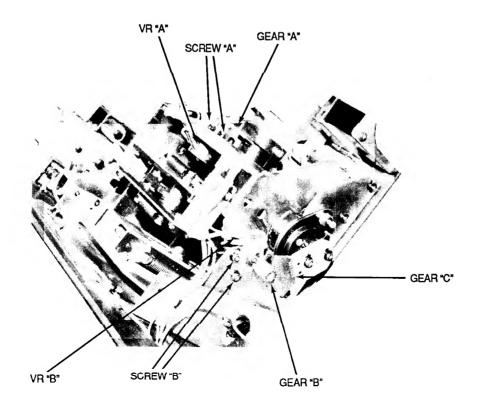
- To open the CONTROL UNIT, take off the 4 TAMPERPROOF SCREWS 1, open the COIN CHUTE DOOR, take off the 2 (M5 \times 25) SCREWS 2, and the entire CONTROL UNIT will open towards you.
- Opening the CONTROL UNIT allows for spring replacements, handle centering V.R. adjustments, motor brush replacements and THROTTLE UNIT centering adjustments.

7. HANDLE UNIT ADJUSTMENT

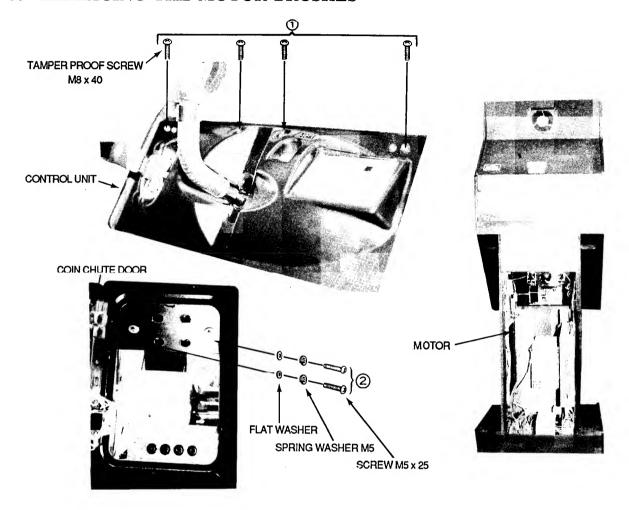
In the test mode, cause the DIAGNOSTIC INPUT DISPLAY to appear on the screen (to select it, push the test switch and move the handle upward and downward).



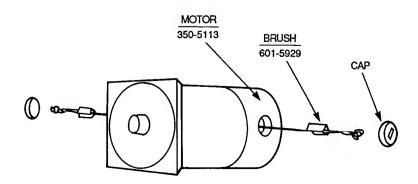
- (1) To make VR adjustments in a horizontal direction (RIGHT/LEFT), release the VR "A" bracket's "A" screws and turn gear "A" in a manner so that when the handle grip is in an unoperated status, 80H ± 2H is obtained. At this time, also make backlash adjustments.
- 2 When making vertical (UP/DOWN) adjustments, while maintaining the present inclination of the handle unit, unfasten the gear "C" bracket's "B" screws and fasten the gear "C" bracket when the monitor display shows 80H ± 2H. For backlash adjustments, loosen the VR "B" bracket.



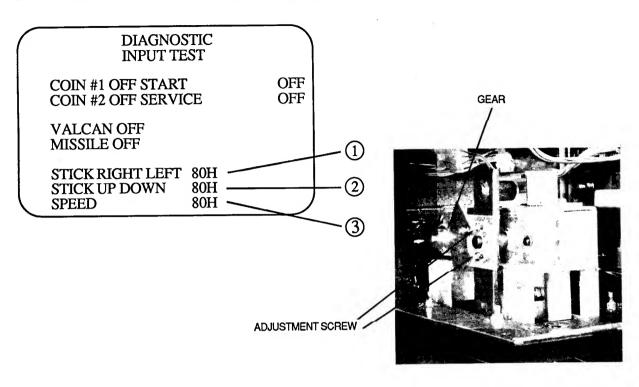
8. REPLACING THE MOTOR BRUSHES



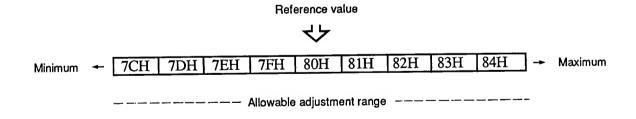
To replace the motor brushes, release the cap with a screwdriver, etc., and take out the brushes. Replacement once every 6 months is recommended. Make sure that both brushes are replaced at the same time.

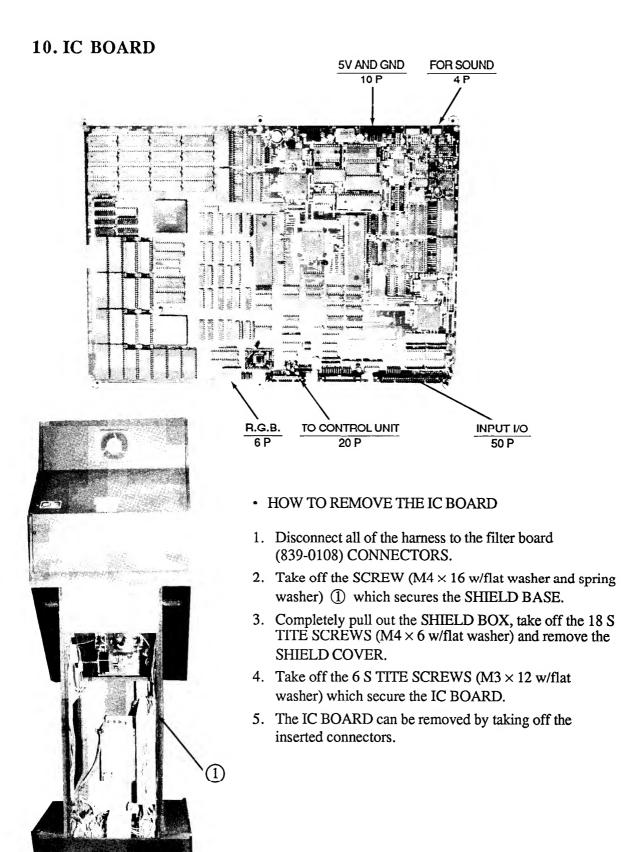


9. THROTTLE UNIT ADJUSTMENT



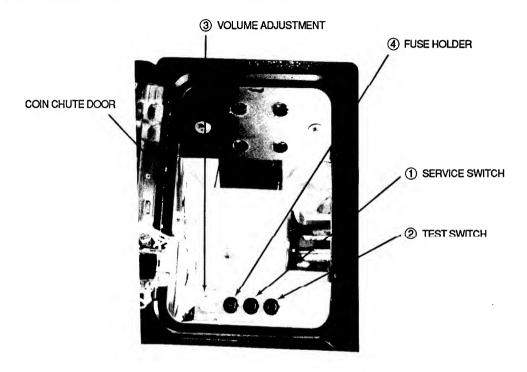
(3) Unfasten the 2 adjustable screws to loosen the volume bracket, making sure that in relation to the gear engagement, the variable value in the test mode is within the allowable adjustment range, and then refasten the adjustment screws.





11. SERVICE SWITCH FUNCTIONS

The layout as shown below can be viewed by opening the coin chute door.



INSTRUCTIONS

1		Used for the purpose of servicing and increasing the credits without registering on the meter (this allows you to check the game).
② ③	VOLUME ADJUSTMENT	For operating this switch, see SELF-TESTING. The volume of the speaker inside the cowl can be adjusted.
4		When the motor is overloaded, the fuse will be burned out, causing the motor which is connected with the handle, to stop. To restart it, replace the fuse with same current limit.

12. DIP SWITCH SETTING

COIN/CREDIT OPTION SWITCH SETTING

DIP SW A

OPT	ION	1	2	3	4	5	6	7	8
1 COIN 1 COIN 1 COIN 5 COINS 6 COINS 7 COINS 2 COINS 3 COINS 4 COINS	1 CREDIT 2 CREDITS 3 CREDITS 1 CREDIT	# 5 F 5 F 5 F 5 F 5 F 5 F 5 F 5 F 5 F 5	0	# 7 6 6 2 2 5 6 #	29599959	# 5 # 5 # 5 # 5 # # 5 # 5 # 5 # 5 #	9 2 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OFF OFF OFF OFF OFF OFF OFF
2 COINS 2 COINS 3 COINS 5 COINS 6 COINS	3 CREDITS 1 CREDIT 2 CREDITS 3 CREDITS 4 CREDITS	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
2 COINS 4 COINS	1 CREDIT 3 CREDITS	ON	ON	OFF	ON	ON	ON	OFF	ON
1 COIN 2 COINS 3 COINS 4 COINS 5 COINS	1 CREDIT 2 CREDITS 3 CREDITS 4 CREDITS 6 CREDITS	OFF	OFF	ON	ON	OFF	OFF	ON	ON
1 COIN 2 COINS 3 COINS 4 COINS	1 CREDIT 2 CREDITS 3 CREDITS 5 CREDITS	ON	OFF	ON	ON	ON	OFF	ON	ON
1 COIN 2 COINS	1 CREDIT 3 CREDITS	OFF	ON	ON	ON	OFF	ON	ON	ON
FREE PLAY		ON	ON	ON	ON	ON	ON	ON	ON
		L	COIN	SW. #1			COIN	SW. #2	

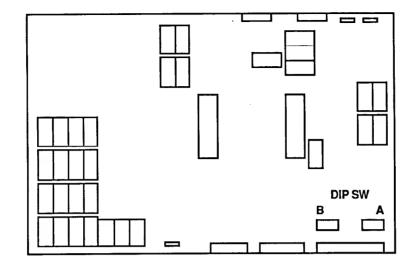
COIN SW 1 COIN SW 2

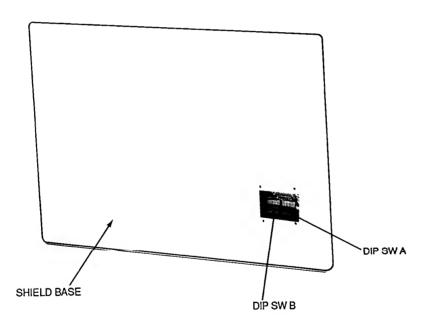
COIN METER

GAME OPTION SETTING

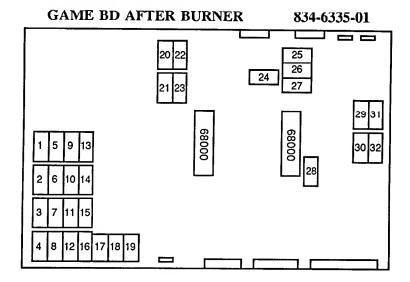
DIP SW B

GAME OF HOUSET HING					Dii	311 D			
ОРТЮ	N	1	2	3	4	5	6	7	8
	OVING DX OVING STD UP RIGHT NOT USED	OFF ON OFF ON	OFF OFF ON ON						
ADVERTISE SOUND	OFF ON			OFF ON					
SHIPS PER CREDIT	3 PLAYERS 4 PLAYERS				OFF ON				
SHIP INCREASE	NO YES					OFF ON			
CONTINUE PLAY	NO YES						OFF ON		
GAME DIFFICULTY	NORMAL EASY HARD HARDEST							OFF ON OFF ON	OFF OFF ON ON



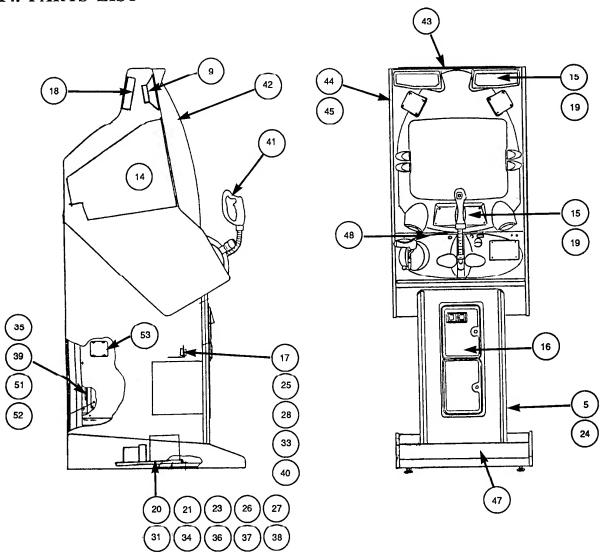


13. EPROM/MASK ROM LOCATIONS



	IC LOCATION	MAIN WORK
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	IC 93 IC 97 IC 101 IC 105 IC 92 IC 96 IC 100 IC 104 IC 91 IC 95 IC 99 IC 99 IC 103 IC 90 IC 94 IC 98 IC 102	OBJECT (CHARACTER & SCENE SCENERY)
17 18 19	IC 154 IC 153 IC 152	FIX SCROLL CHARACTER
20 21 22 23	IC 58 IC 63 IC 57 IC 62	MAIN PROGRAM
24	IC 17	SOUND PROGRAM
25 26 27	IC 11 IC 12 IC 13	SOUND DATER
28	IC 40	ROAD
29 30 31 32	IC 21 IC 30 IC 20 IC 29	SUBPROGRAM

14. PARTS LIST



ASSEMBLY CABINET PARTS LIST

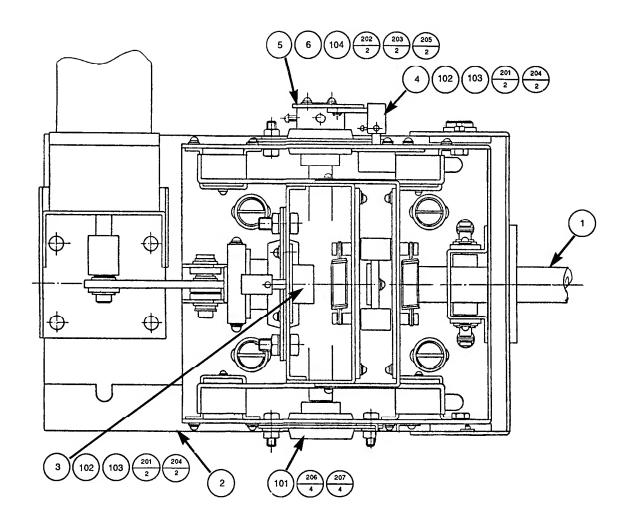
ITEM	PARTS NUMBER	DESCRIPTION
1	000-0525	M SCR PH M5X25 (PANEL)
2	008-0516	TMP SCR M5X16 (PANEL)
3	008-0535	TMP SCR M5X35 (TV DOOR)
4	029-0099	TMP SCR M8X40 (PANEL)
5	1050-0064	MAIN SW. BRACKET
6	1170-0184	TERMINAL BLOCK, 4P
7	1170-5131	TERMINAL BLOCK, 5P
8	1170-5131A	TERMINAL LUG
9	130-5018	SPEAKER 8-OHM 10W W/SHIELD
10	1500-0173	CAPACITOR, 4700 uF 50V
11	1500-0173A	CLAMP, CAP .
12	1502-0000	POWER CORD RETAINER
13	1710-5151	FAN SCREEN COVER

```
14
      2000-5090
                         TV MONITOR
15
                         LAMP SOCKET
      2141-5064
16
      2200-0000
                         COIN DOOR
17
      2200-5179
                         VOL CONT B-5K
18
      2600-0011-01
                         FAN 110V
19
      3901-5167
                         LAMP 110V 30W
20
                         DC/DC CONVERTER
      400-5070
21
      400-5071
                         SW REGULATOR, 5V/7A
22
      4211-6671
                         STICKER, DANGER
23
      4810-0157
                         RECTIFIER, BRIDGE 2A
24
      5090-0039
                         PUSH BUTTON POWER SW
25
      5090-5028
                         PUSH BUTTON SW
26
      5140-0031
                         FUSE 6A, FAST
27
      5240-0034
                         FUSE 5A, FAST
28
                         FUSE 3A, FAST (MOTOR)
      5140-0036
29
      5140-0064
                         FUSE HOLDER 2P
30
      5142-0000
                         FUSE HOLDER, PANEL
31
      5600-5115
                         TRANSFORMER (160P6)
32
      6010-0001
                         FUSE COVER
33
                         KNOB 22m
      6010-0042
34
                         LINE FILTER
      6010-0429
35
      834-6335
                         GAME BOARD
36
      839-0035-01
                         POWER AMP DC12V 10W
37
      839-0048
                         SSR BOARD, MOTOR
38
      839-0051
                         SSR BOARD, LAMP
39
      839-0108
                         FILTER BOARD
40
      KRO-1721
                         SW BRACKET
41
      TX-13001
                         CONTROL PANEL ASSY
42
      TX-1616
                         WINDOW MASK ASSY
43
      TX0-1623
                         BRACKET, WINDOW MASK, TOP
44
      TX1-1601-D
                         STICKER, SIDE R
45
      TX1-1601-E
                         STICKER, SIDE L
46
      TX1-1601-F
                         STICKER, SEGA
47
      TX1-1605
                         ORNAMENT PLATE, TOE GUARD
48
      TX1-1608
                         MAIN BRACKET, CONTROL ORNAMENT SASH L
49
      TX1-1609
                         ORNAMENT SASH L
50
      TX1-1610
                         ORNAMENT SASH R
51
      TX1-1617
                         SHIELD COVER
52
      TX1-1618
                         SHIELD BASE
53
      TX1-1619
                         ACCESS PLATE
54
      TX2-0000
                         CORNER PROTECTOR, LEFT
55
      TX2-0001
                         CORNER PRTOECTOR, RIGHT
56
      220-5130
                         VOL CONT B-5K (SPARE PARTS)
57
                         PUSH SW VALCUN (SPARE PARTS)
      509-0058
58
      510-5009
                         PUSH SW MISSILE (SPARE PARTS)
59
      540-006-01
                         WRENCH, M4 (SPARE PARTS)
                         WRENCH, M5 (SPARE PARTS)
60
      540-0007-01
61
      540-0009-01
                         WRENCH, M8 (SPARE PARTS)
62
                         MOTOR BRUSHES (SPARE PARTS)
      601-5929
63
       TX-1317
                         EXT. SPRING (SPARE PARTS)
64
      TX-1330
                         EXT. SPRING (SPARE PARTS)
```

EXT. SPRING (SPARE PARTS)

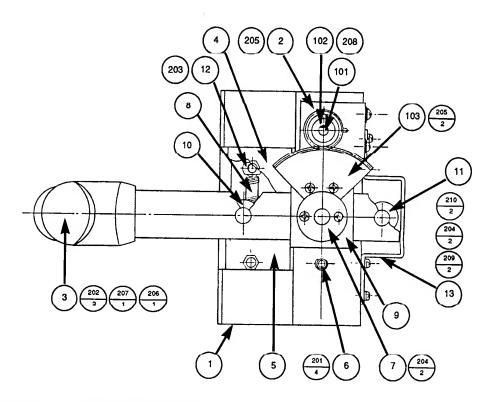
65

TX-1423



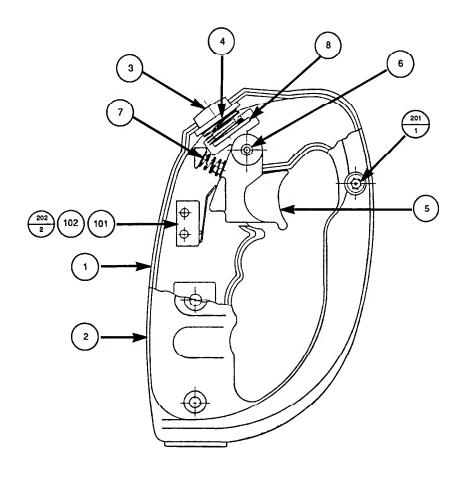
CONTROLLER UNIT ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1351	SUB ASSEMBLY CONTROLLER
2	TX-1352	ASSEMBLY SHOCK MECHANISM
3	TX-1318	VR BRACKET A
4	TX-1334	VR BRACKET B
5	TX-1307	ADJUST PLATE
6	MX-2017	ADJUSTER
101	100-5042	BEARING D=12
102	220-5130	VOL CONT 5KOHM
103	601-5410	GEAR 15 D=16
104	601-5423	GEAR 1/6
201	000-0408-FS	M SCR W/FS M4 X 8
202	000-0408-S	M SCR W/FS M4 X 8
203	000-0412-FS	M SCR W/FS M4 X 12
204	028-0003	SET SCR PH SPECIAL M3 X 8
205	028-0021	SET SCR PH SPECIAL M4 X 16
206	061-0006	SPR WSHR M6
207	054-0006	U NUT M6



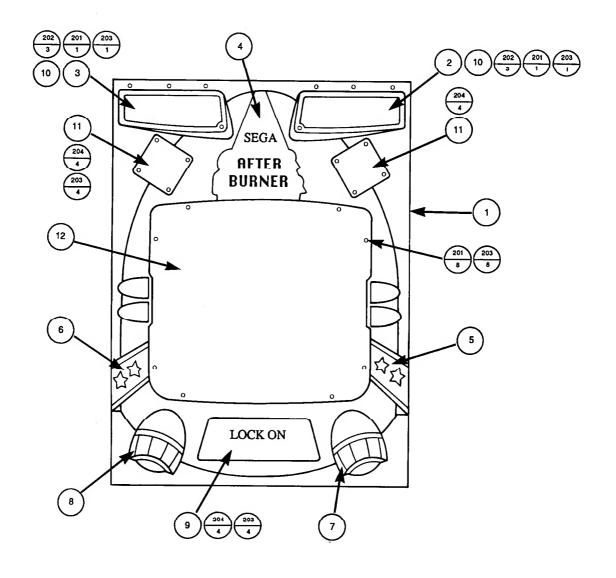
THROTTLE ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1418	THROTTLE BASE
2	TX-1419	VR BRACKET
3	TX-1402	THROTTLE LEVER
4	TX-1403	SWING ARM A
5	TX-1404	SWING ARM B
2 3 4 5 6 7	TX-1405	SHAFT SWING ARM
7	TX-1406	GUIDE RING
8	TX-1423	EXT. SPRING
9	TX-1003	ADJUST PLATE
10	CY-2307	ROLLER
11	KR-1303	STOPPER PLATE
12	TX-1422	STUD
13	TX-1430	STOPPER BRACKET U/R
101	220-5130	VOL CONT B-5K OHM
102	601-5424	GEAR 30
103	601-5863	GEAR 1/4
201	065-0004	E RING 4mm
202	065-0008	E RING 8 mm
203	054-0006	U NUT M6
204	000-0414-S	M SCR PH W/S M4 X 14
205	000-0408-FS	M SCR PH W/FS M4 X 8
206	060-0010	FLT WSHR M 10
207	045-0022	COT PIN 2.5 X 20
208	028-0014	SET SCR HEX SKT CP M4 X 4
209	000-0406-S	M SCR PH W/S M4 X 6
210	054-0004-S	U NUT M4
- · •	33.00040	0 140 1 1914



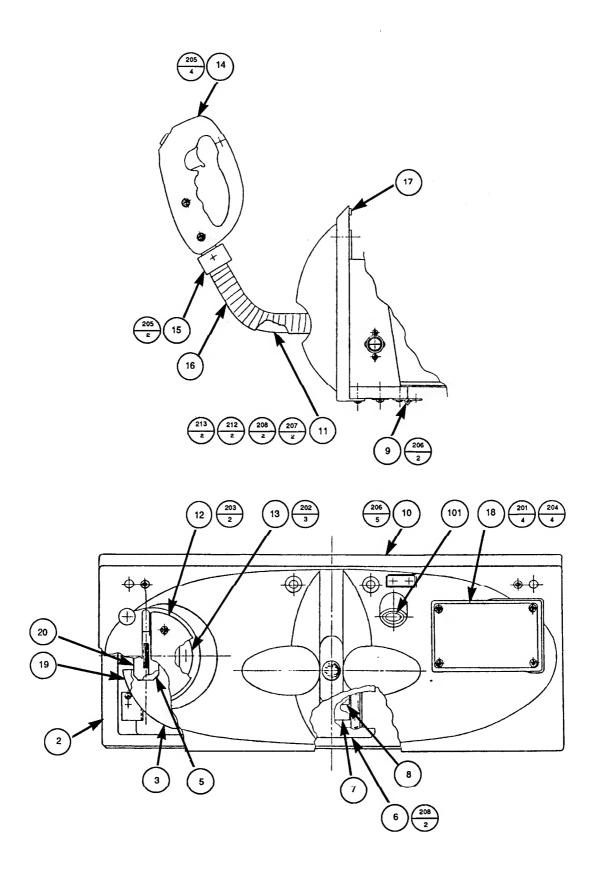
HANDLE GRIP ASSEMBLY PARTS LIST

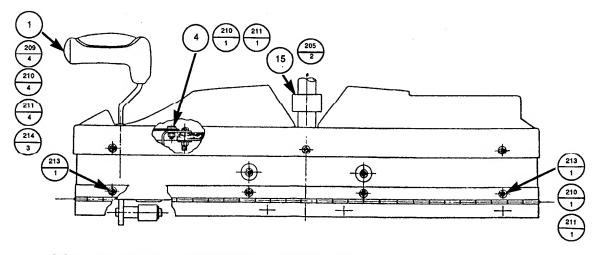
ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1336	HANDLE GRIP LEFT
2	TX-1337	HANDLE GRIP RIGHT
3	TX-1338	BUTTON
4	TX-1339	COMPRESSION SPRING
5	CD-2041	TRIGGER
6	CD-2042	SHAFT TRIGGER
7	125-0011	COMPRESSION SPRING
8	839-0087	SWITCH BOARD
9	600-5521	WIRE HARNESS, HANDLE GRIP
101	509-0058	MICRO SWITCH
201	029-0052	TMP PRF SCR PH M5 X 10
202	029-0134	M SCR PH M2 X 10



FRONT MASK ASSEMBLY PARTS LIST

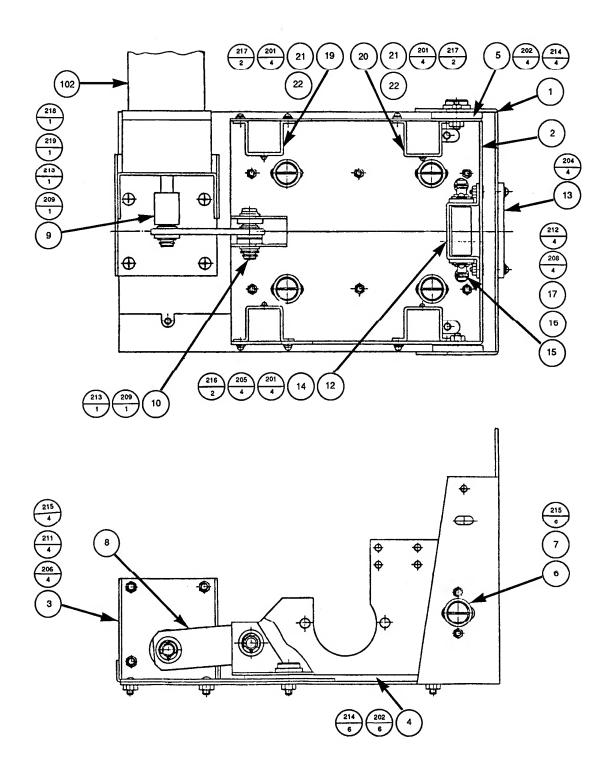
ITEM	PARTS NUMBER	DESCRIPTION
1 2 3 4 5 6 7 8 9 10	TX1-1616-A TX1-1616-B TX1-1616-C TX1-1616-D TX1-1616-E TX1-1616-F TX1-1616-G TX1-1616-H TX1-1616-J TX1-1616-K TX1-1616-L	FRONT PANEL W/OUT MASK PLATE R PLATE L STICKER, AFTER BURNER STICKER, SIDE R STICKER, SIDE L STICKER, JET NOZZLE R STICKER, JET NOZZLE L PLATE, LOCK-ON BRACKET GUARD PLATE, SPEAKER
12 201 202 203	TX1-1616-AX 008-0416 031-0414-B 051-0004	SCREEN, CLEAR SMOKE TMP SCR M4X16 CARRIAGE BOLT BLACK M4X14 FLANGE NUT M4





CONTROL PANEL ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	
1	TX-14001	ASSEMBLY THROTTLE
2	TX-1341	CON PANEL BASE
2 3 4	TX-1342	FLAG PLATE
4 E	TX-1343	SHLDER SCREW
ე ი	TX-1344	COVER
5 6 7	TX-1345 TX-1346	GUIDE PLATE SLIDE PLATE A
8	TX-1346 TX-1347	SLIDE PLATE A SLIDE PLATE B
9	TX-1347 TX-1366	HINGE 590
10	TX-1306 TX-1348	
11	TX-1346 TX-1350	CONTROL PANEL COVER
12	TX-1330 TX-1349	ASSEMBLY CONTROLLER THROTTLE COVER
13	TX-1349	COVER HOLDER
14	TX-1307 TX-1335	ASSEMBLY HANDLE GRIP
15	TX-1310	HOLDER A
16	TX-1316	PROTECT TUBE
17	HN-1069	RUBBER CUSHION
18	422-0209	PLAY INSTRUCTION PLATE
19	TX-1369	FLAG
20	TX-1370	COVER A
101	509-5050	START SWITCH W/LMAP
201	059-0014	WELL NUT M4
202	001-0406	M SCR FH M4 X 6
203	008-0408	TMP PRF SCR M4 X 8
204	008-0416	TMP PRF SCR M4 X 16
205	029-0052	TMP PRF SCR M5 X 10
206	08-0516	TMP PRF SCR M5 X 16
207	008-0520	TMP PRF SCR M5 X 20
208	000-0516-FS	M SCR PH W/FS M5 X 16
209	000-0525	M SCR PH M5 X 25
210	061-0005	SPR WSHR M5
211	054-0005	U NUT M5
212	069-0064	FLT WSHR BLK 5.5-20 X 6
213	008-0525	TMP PRF SCR TH M5 X 25
214	005-3113-F	W SCR PH W/F 3.1 X 13



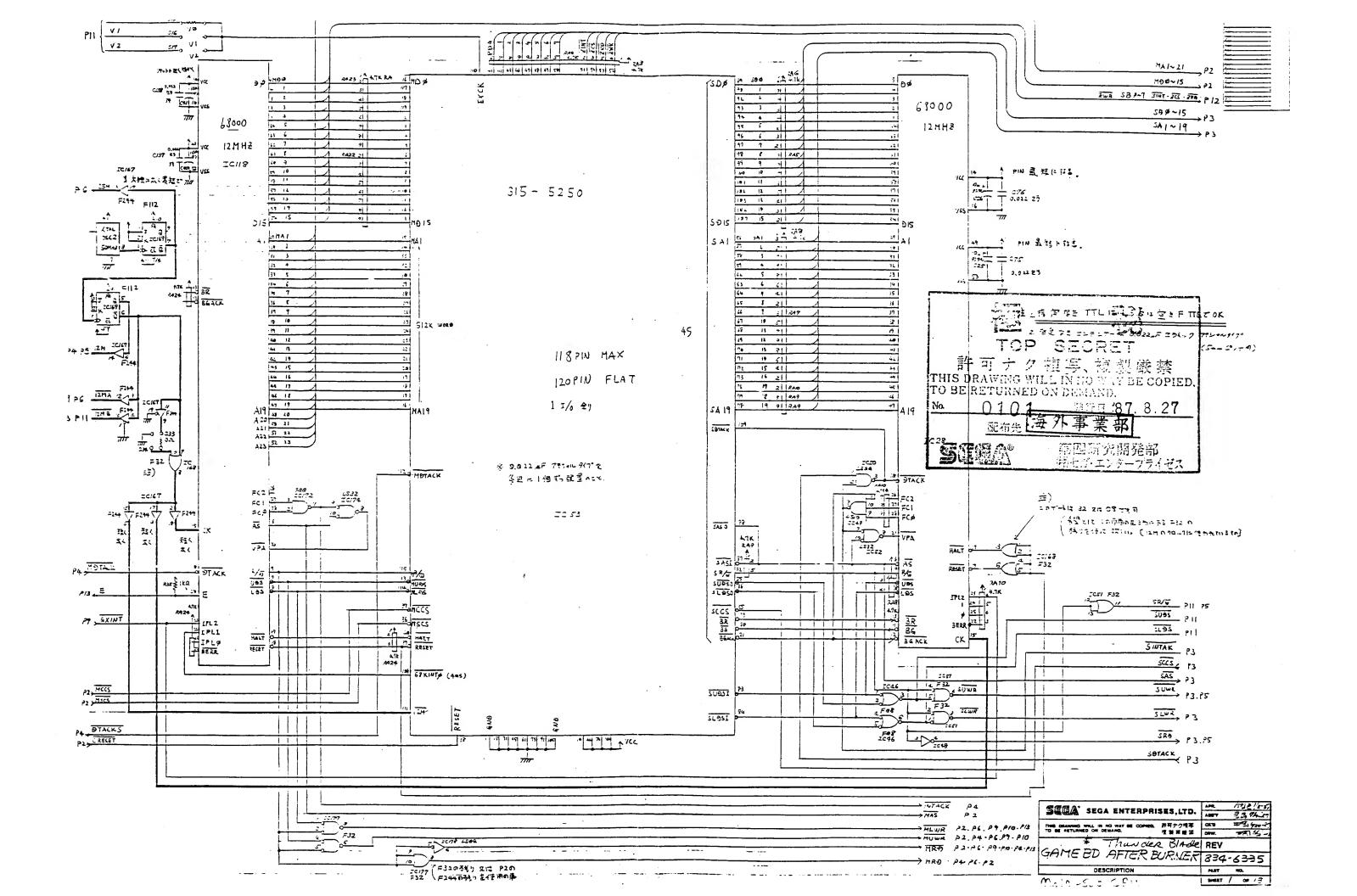
SHOCK MECHANICAL UNIT PARTS LIST

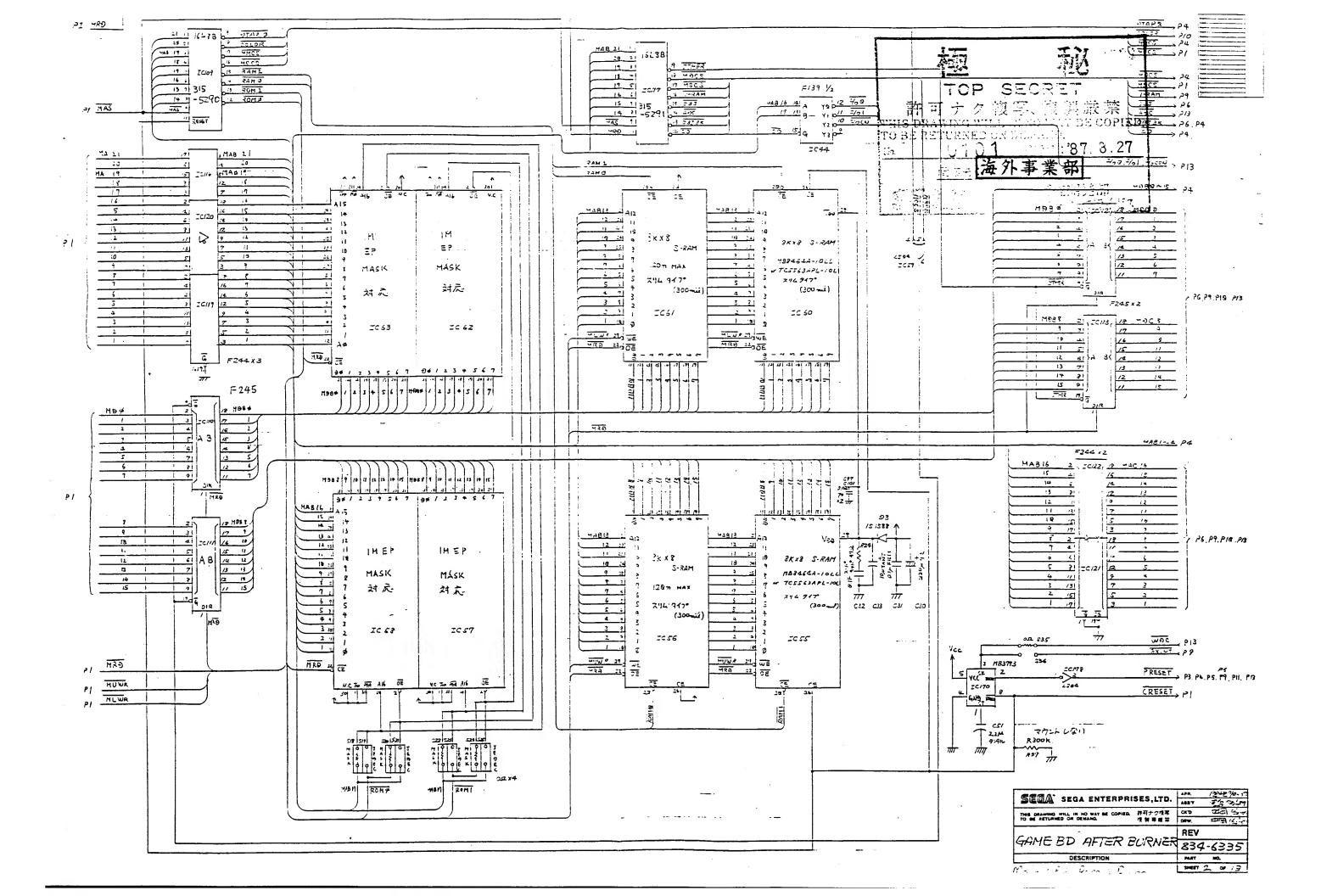
ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1353	MAIN BASE
2	TX-1354	MOVING BASE
3	TX-1357	MOTOR BRACKET
4	TX-1358	SLIDE PLATE BOTTOM
5	TX-1359	SLIDE PLATE SIDE
3 4 5 6 7	TX-1360	GUIDE WASHER
7	TX-1361	SHOULDER SCREW
8	TX-1362	ROD
9	TX-1363	CAM
10	TX-1364	SHAFT
12	TX-1325	SPRING BRACKET
13	TX-1326	FRONT GUIDE
14	TX-1327	SIDE PLATE
15	TX-1328	SHAFT B
16	TX-1329	PIPE
17	TX-1330	EXT. SPRING
19	TX-1331	HOLDER L
20	TX-1332	HOLDER R
21	TX-1333	BUMPER B
102	350-5113	MOTOR DC45V
201	000-0412-FS	M SCR M4 X 12
202	001-0414	M SCR M4 X 14
204	000-0510-FS	M SCR M5 X 10
205	000-0512	M SCR M5 X 12
206	029-0035	M SCR M6 X 12
208	060-0008	FLT WSHR M8
209	060-0010	FLT WSHR M10
211	061-0006	SPR WSHR M6
212	065-0006	E RING 6mm
213	045-0022	COT PIN 2.5 X 20
214	054-0004	U NUT M4
215	054-0006	U NUT M6 U NUT M5
216	054-0005 000-0305-S	M SCR M3 X 5
217 218	028-0012	SET SCREW SPECIAL M5 X 12
	045-0014	SPR PIN 3 X 26
219	045-0014	OFFIN D A 40

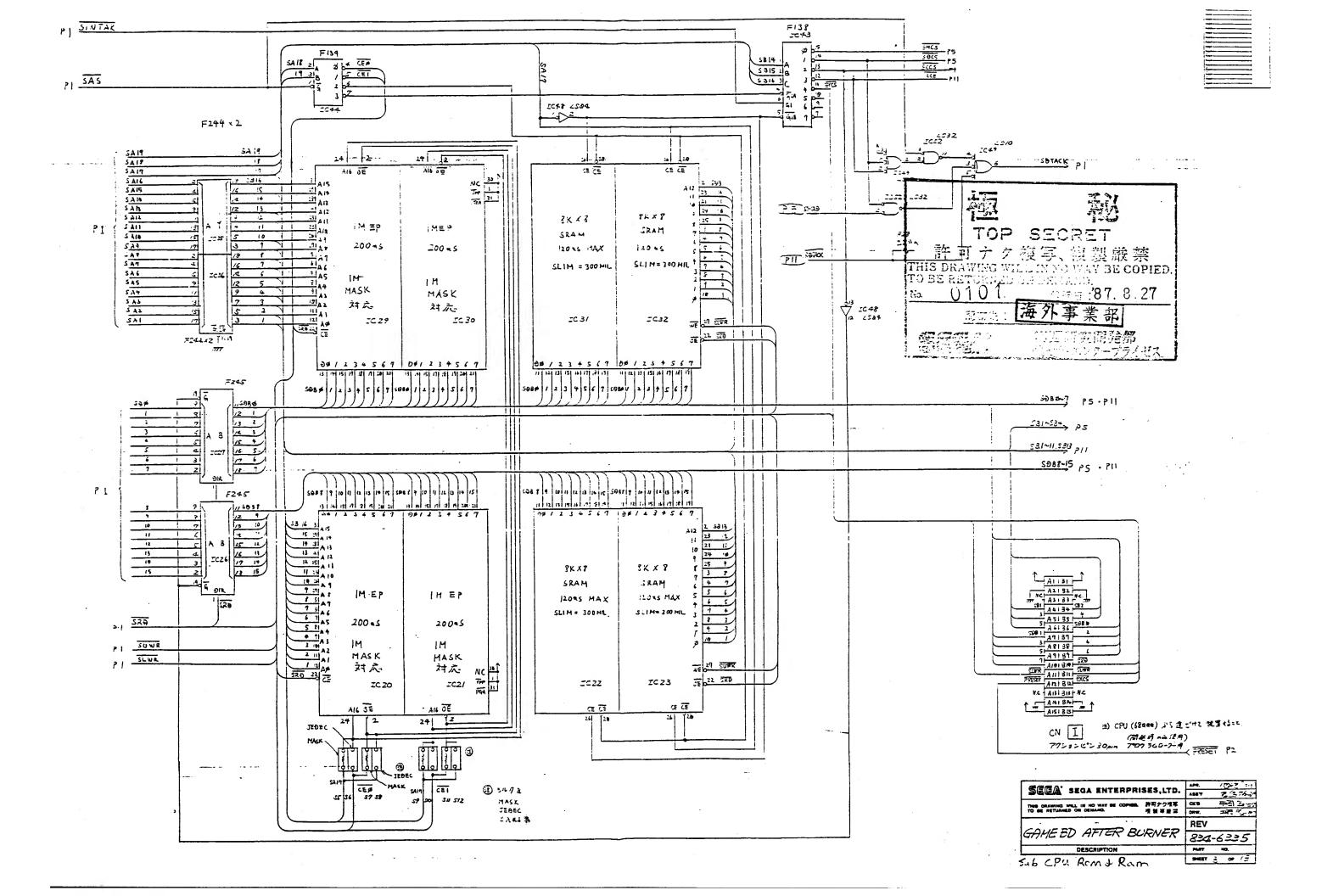
WIRING DIAGRAM

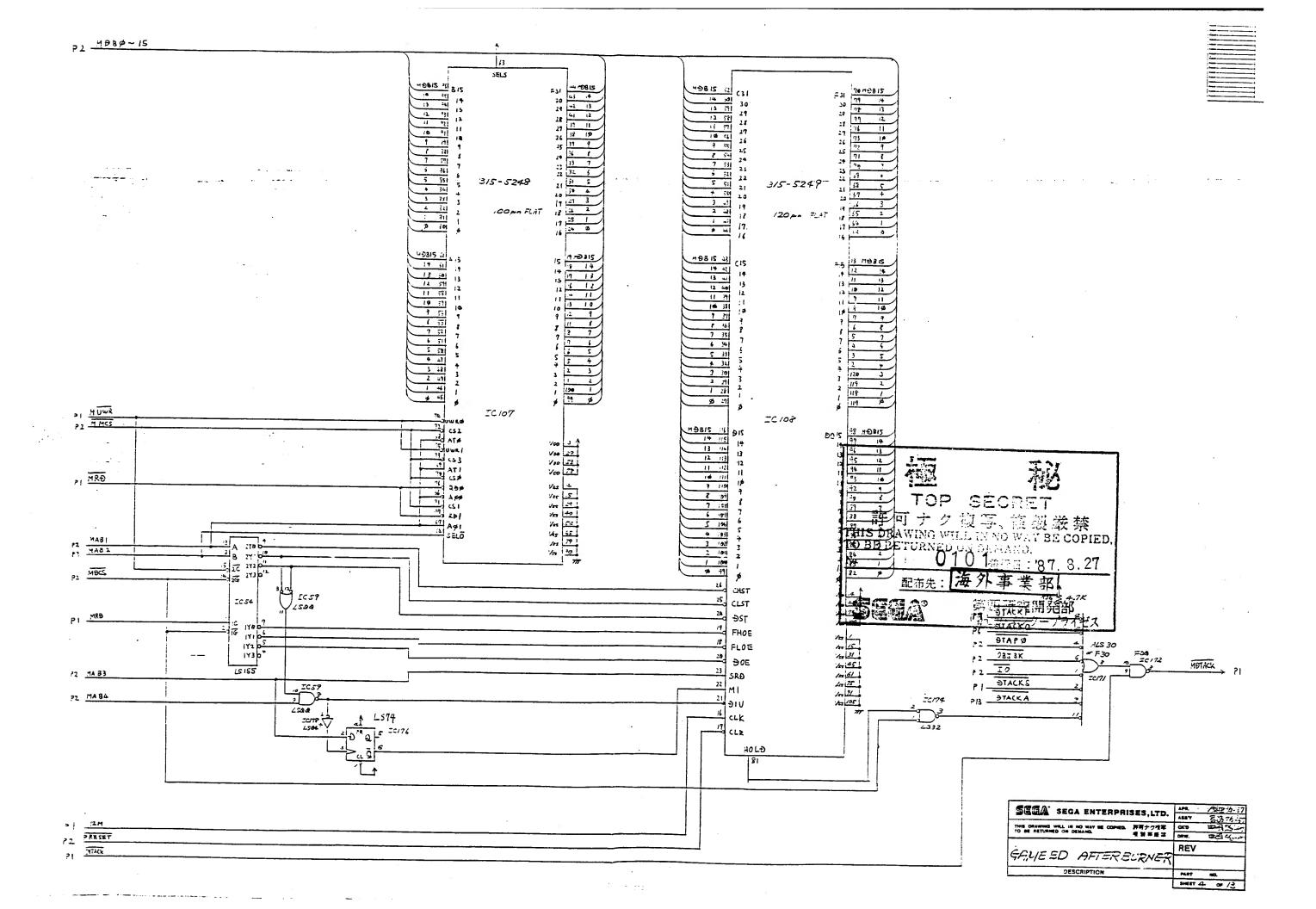
SEGA ENTERPRISES, INC. (USA)

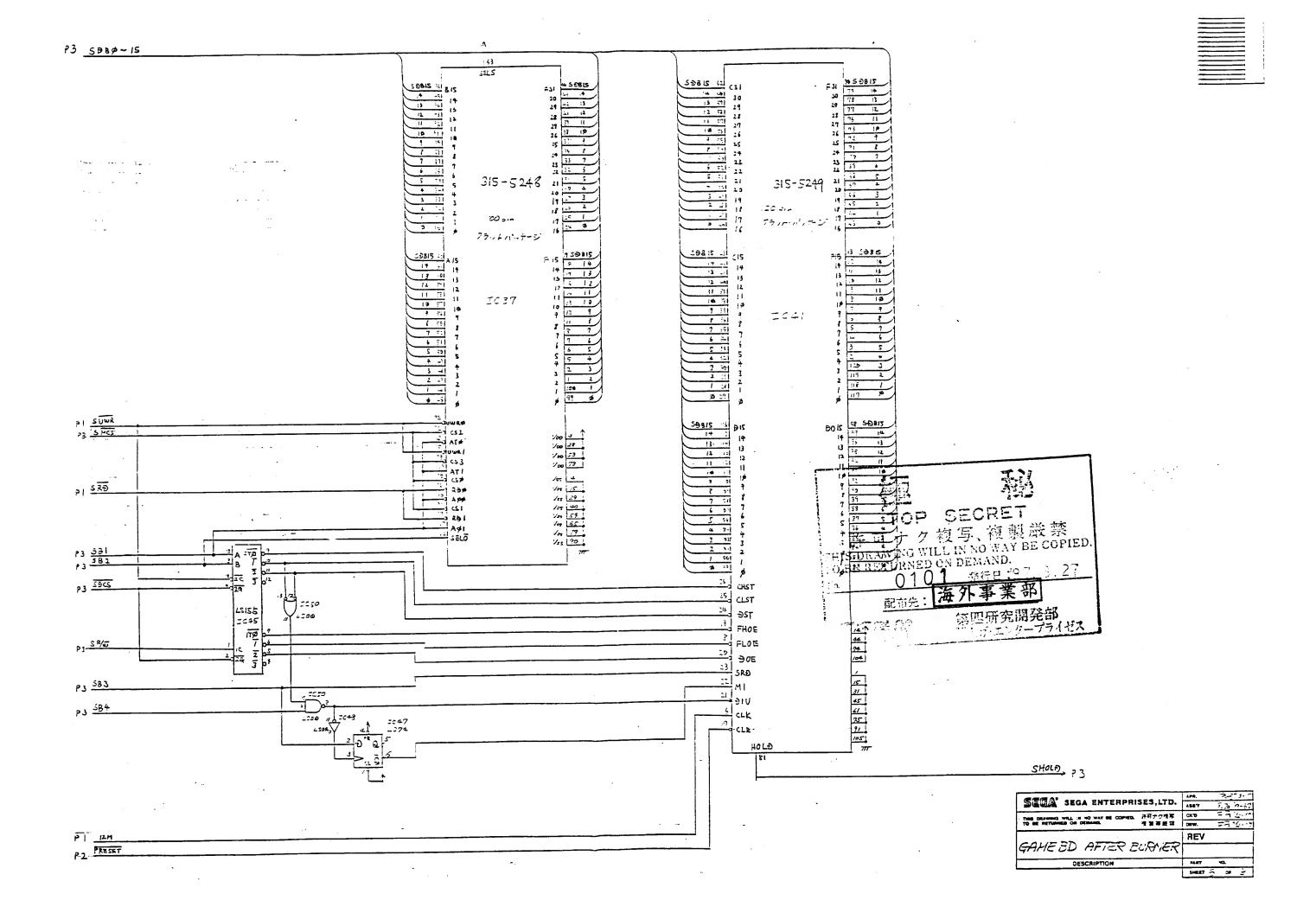
2149 Paragon Drive San Jose, CA 95131 Tel (408) 435-0201 ©SEGA 1987

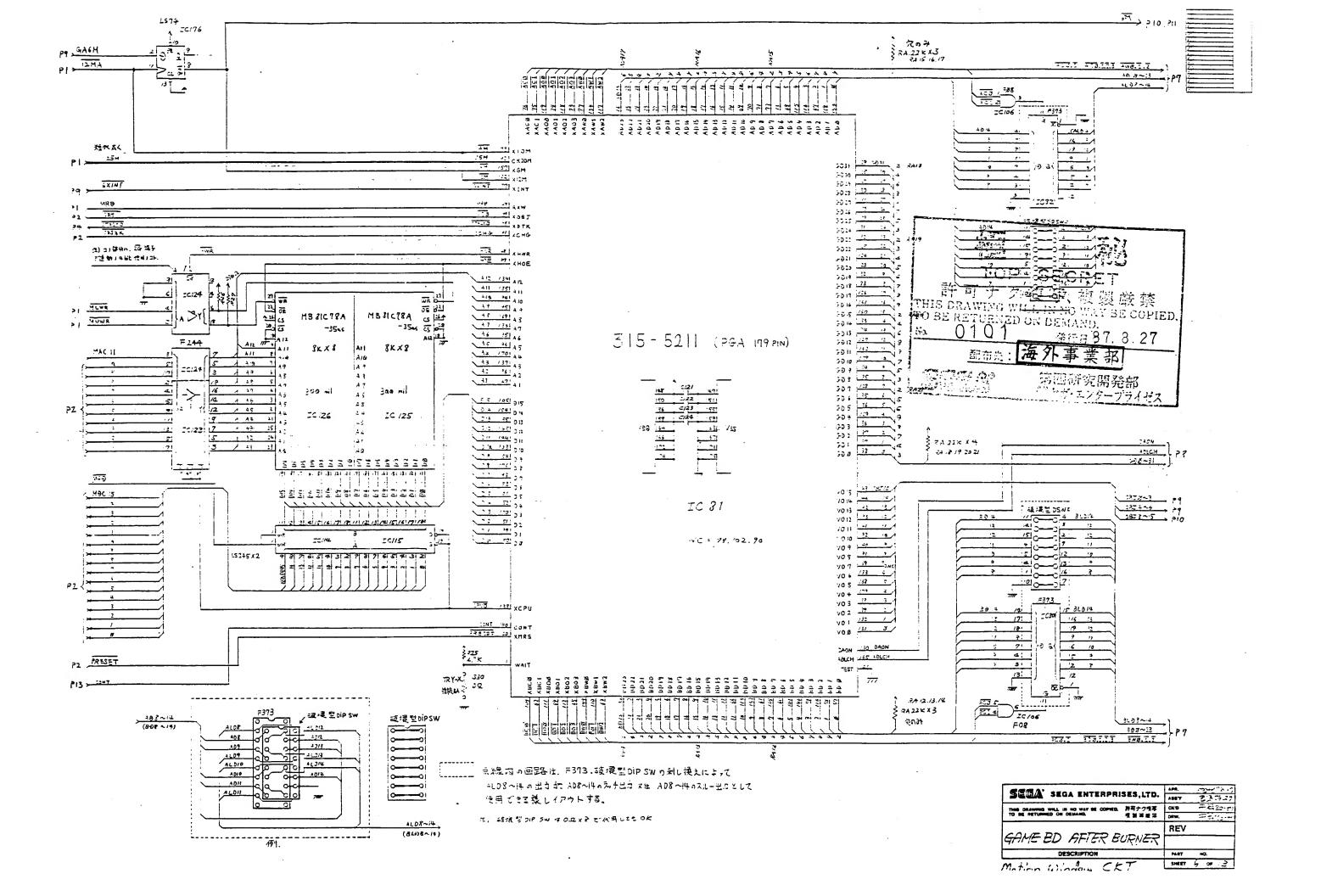


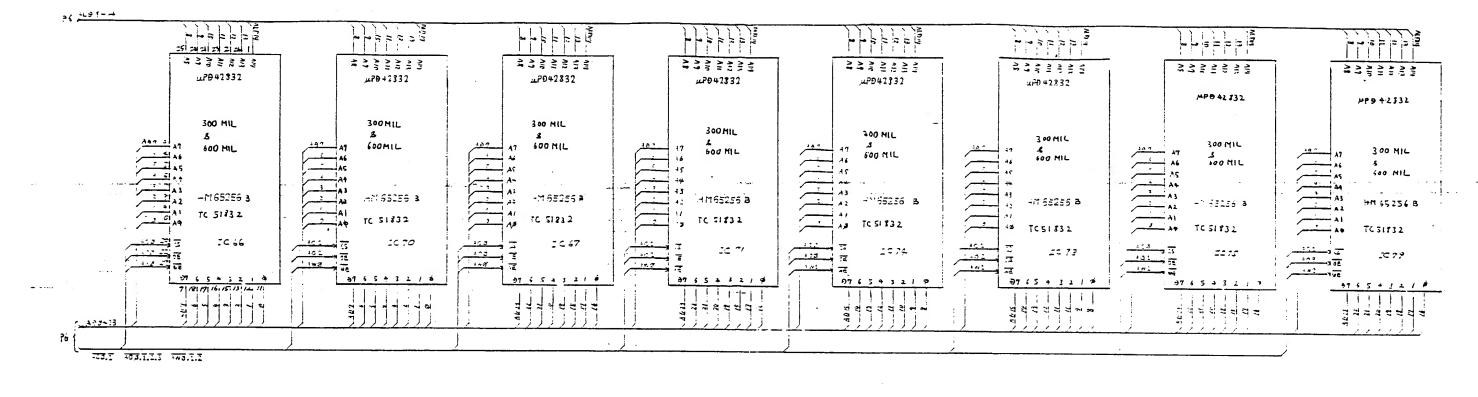


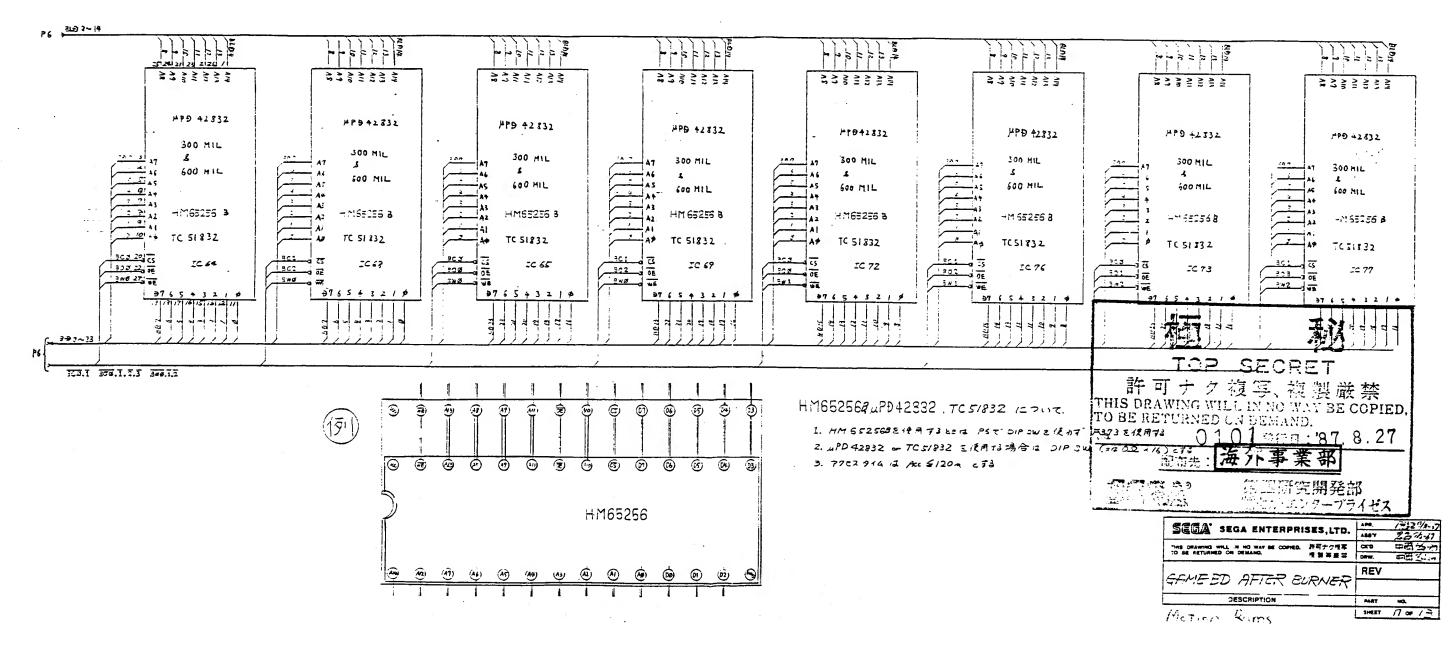


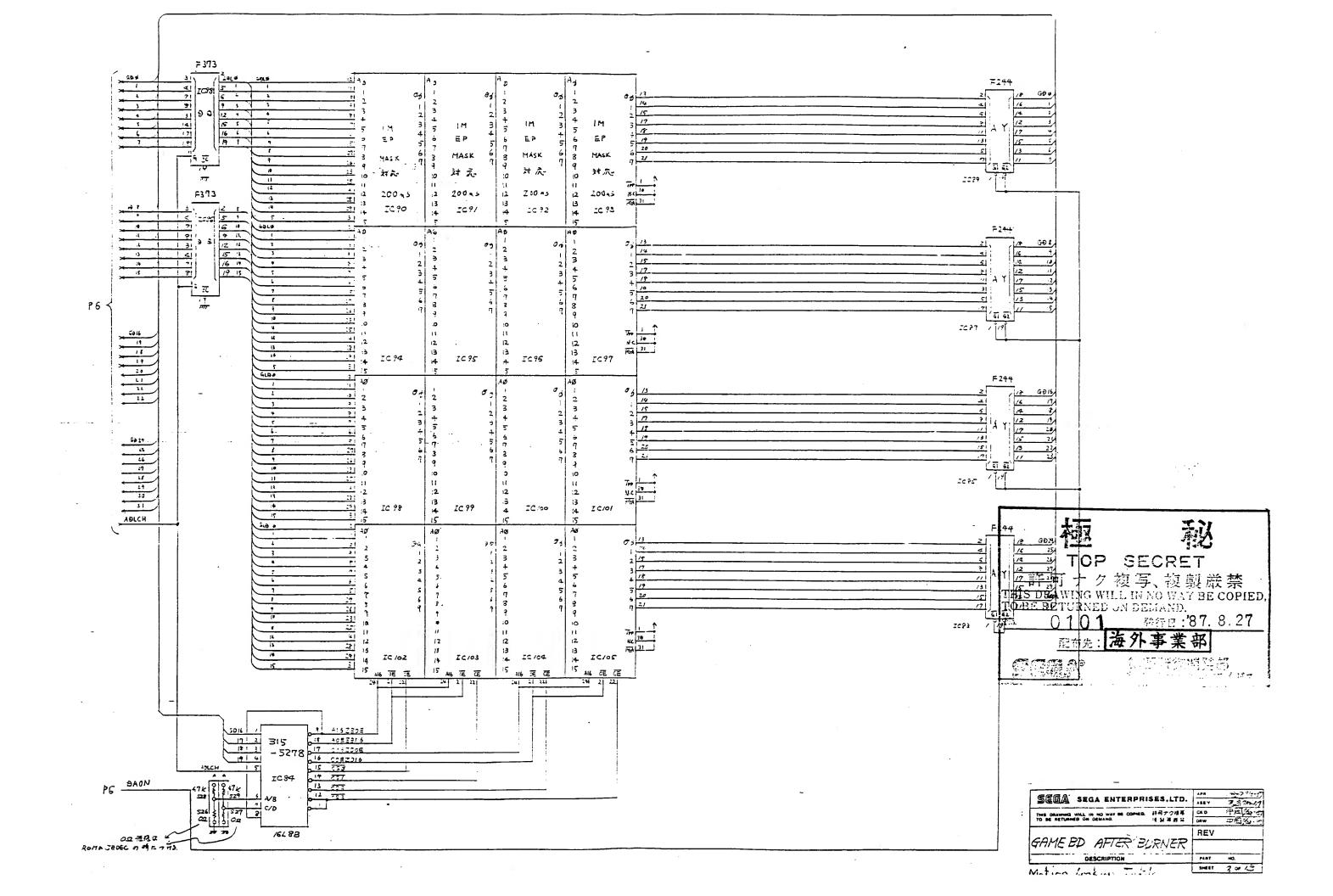


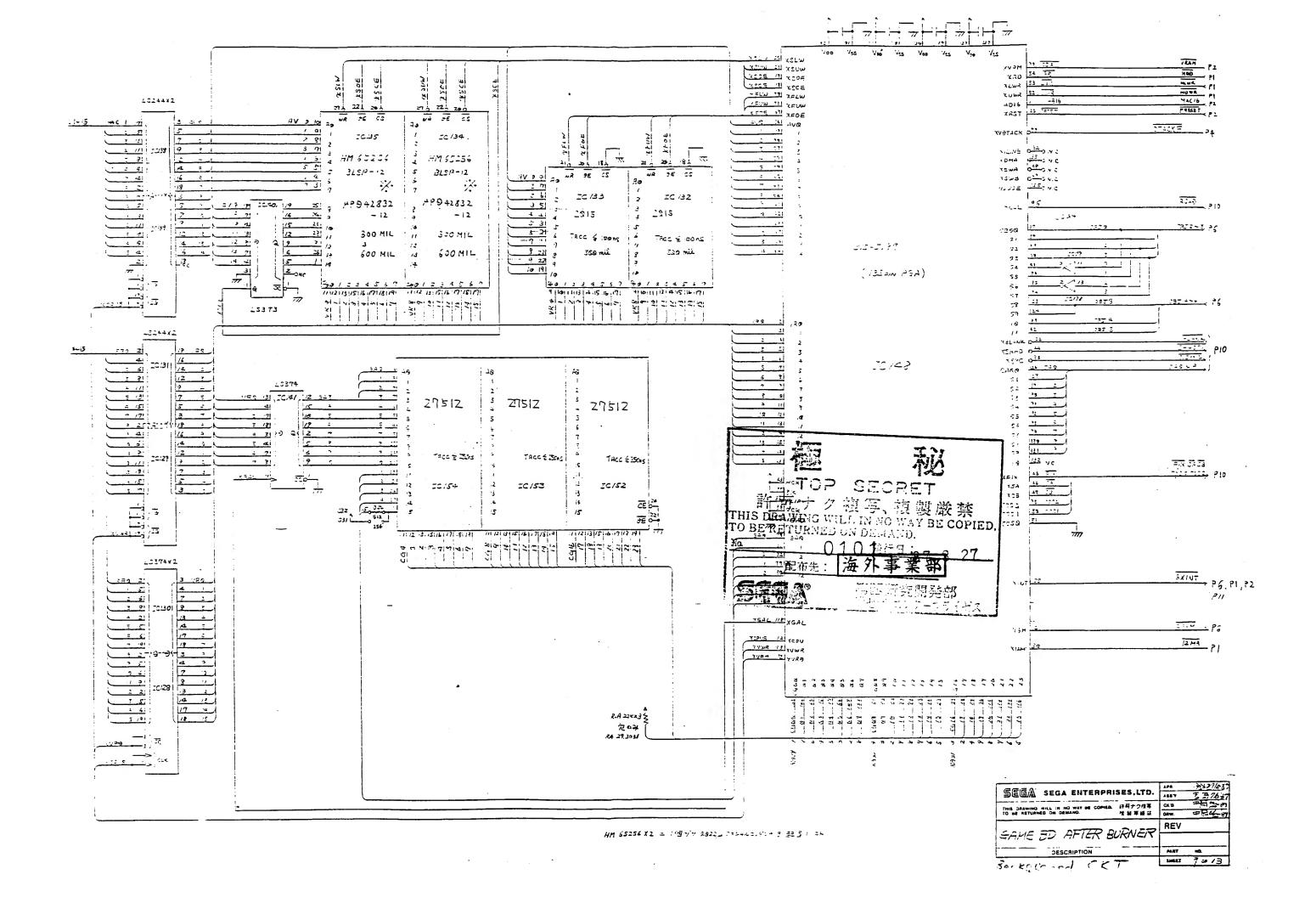


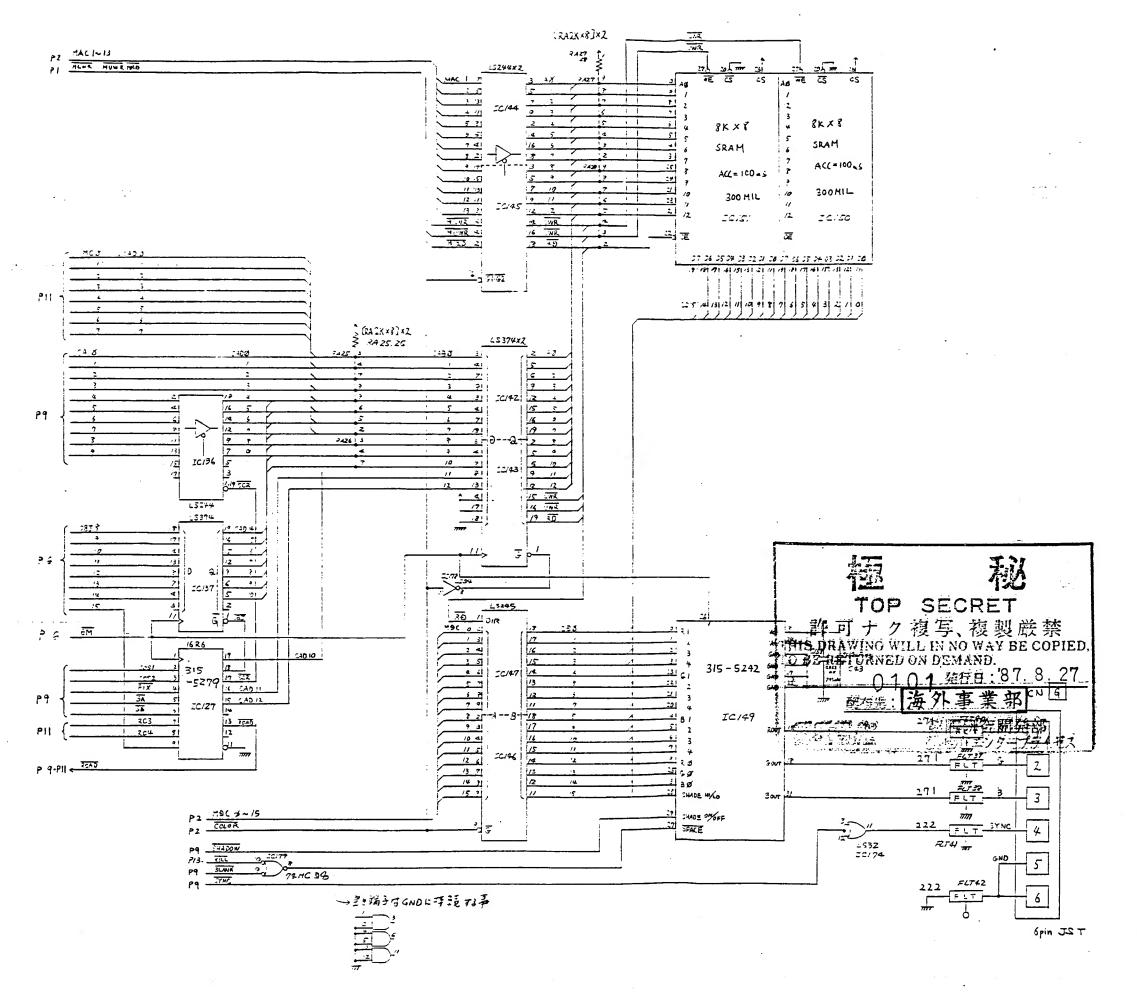












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